Experiment Analysis of Used Sanitary Napkins And Its Environmental Effects

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Abstract- *Disposal of sanitary napkins is a global problem. According to the census data of year 2011 about 586,469,174 females lived in India out of total population of 1210,193,422 i.e. about 48.46% of total population is occupied by females. As the average weight of napkin is 15.72 gm and with considering minimum utilization rate of three napkins per month which offers huge burden of about 109765.9 Tons per year on the environment due to direct and indirect disposal of these used napkins. So it is very important to give proper disposal system and approach for used sanitary napkins.*

The napkins are commonly disposed either by flushing them in the drains or by burning them. Flushing the napkin in drains results in clogging of drain line and associated plumbing problems. Burning the sanitary napkins often causes air and soil pollution. To overcome this problem, a solar based sanitary napkin disposal has been proposed, which burns the napkin to ashes and ensures pollution is minimal. As this system is aimed at rural parts of a country, it is powered by solar energy, which is available in abundance. Performance of this system is analyzed by means of time taken for the napkin to be burnt and converted to ashes. Thus the proposed work helps the people to dispose the napkin in a simple way and creates a pollution free environment. Also the cost of proposed work is very less so that the system becomes economical. This work is specifically designed for domestic or household use.

Keywords- Disposal of Sanitary napkins, solar system, economical design, domestic use.

I. INTRODUCTION

Sanitary napkins are a boon to present day women. Availability of menstrual hygiene products has made it easy for women to be active even during their monthly cycle is the perfect example of women emancipation and this empowerment makes the present day woman stronger than ever. However, like every medicine has side effects; usage of menstrual hygiene products has fallouts too. AC Nielsen's study on 'Sanitary Protection: Every Woman's health right' reports that around 36 million women in India use sanitary napkins; Which makes it 12% of 300 million women in the age group of 15-54 years[1]. A woman uses around 10,000 pads, on an average, in her entire lifetime for around 30-40 years; this sums up to 58,500 million pieces per year[1]. With this much of toxic menstrual waste which is being generated by only 12% of the women in India; imagine the burden of menstrual waste in India in the years to come and the impact on health of waste pickers when the government is promoting usage of sanitary napkin in order to increase the 12% figure to around 100%.

II. METHODOLOGY

3.1 Sample selection:

Different sanitary napkin brands are taken into account for this research. Sanitary napkin having different feature for example extra large, cotton based or thin or thick are going to be used.

3.2 Sample collection:

For this research used sanitary napkins are collected from different age group women.

Sanitary napkins are of different brands and having different size and features. The weight of each sample is calculated for further laboratory analysis.

3.3 Finding existing sanitary napkin disposal technique:

There are several techniques used to dispose used sanitary napkins. I find the best sanitary napkin disposal techniques in this step. I also have to achieve the economy of model so that poor people also can use it.

3.4 Design a model for used sanitary napkin disposal:

The proposed arrangement of clean napkin transfer goes for decreasing both air and soil contamination. Sun based power is used for working of this framework. At the point when the clean transfer framework is turned ON, a voice framework prompts the client to put the napkin in the plate accommodated the reason. At the point when the napkin is set

in the plate the warming loop consumes the sterile napkin to cinders. The gathered cinder can is flushed out through the droplet of the can.

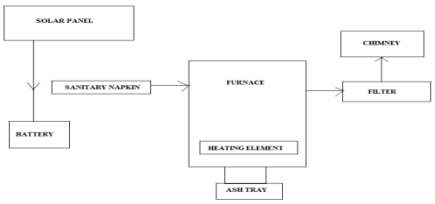


Fig. No. 1 Flow chart of proposed framework

III. RESULTS AND CONCLUSION

4.2 Results of model setup:

4.1.1 Costing of material used for construction:

Table No 1 Costing of material used for incinerator

Sr no	Name of material	specifications	Prize in Rs
1	furnace	Mild steel 2mm thick cylinder having height 40cm	200
2	Heating element	1000W spiral heating element Maximum temperature produces 900 °C	350
3	Fiberglass wool	High temperature insulation and electric resistance	600
4	Wire and cables	1cm thick cable with good insulation casing	70
5	fabrication	Fabrication is done manually	180
6	Ash tray	Aluminum sheet having 2mm thickness	100
7	chimney	Mild steel having high heat resistance	100
Total in Rs			1500/-

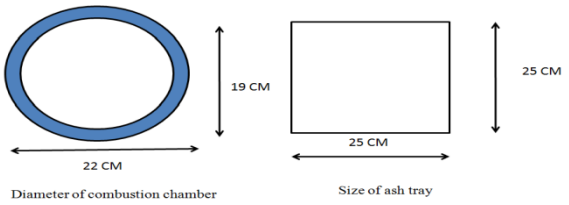


Fig. No. 2 Dimensions of proposed model

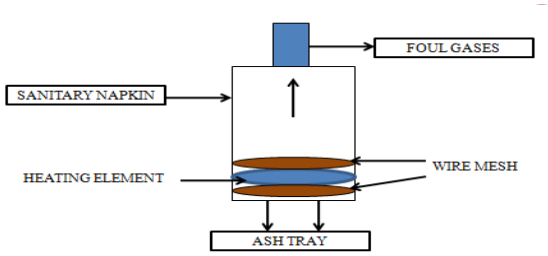


Fig. No. 3 Parts of sanitary napkin destroyer

Fig no 4 actual photograph of proposed system and ash tray

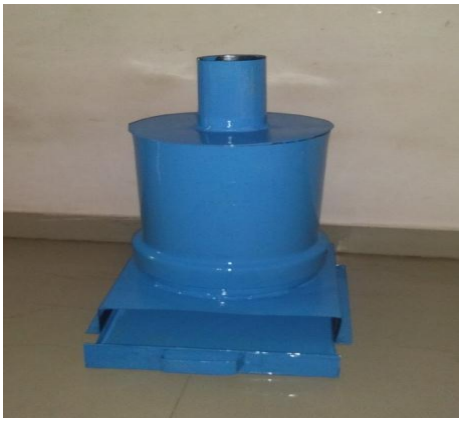
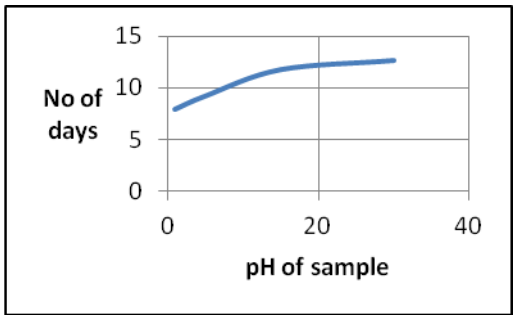
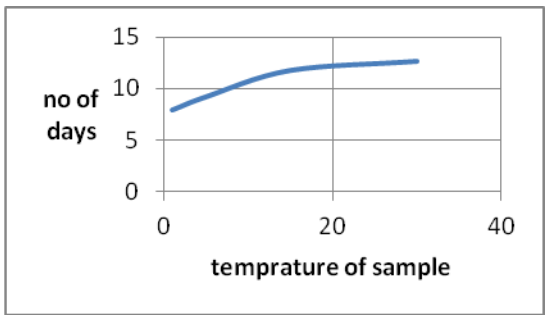


Fig no 5 front view of proposed system

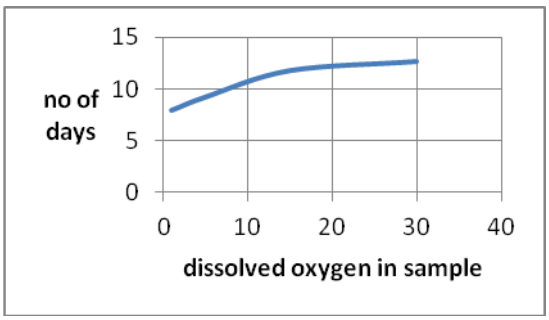
4.3 Results of preliminary analysis:



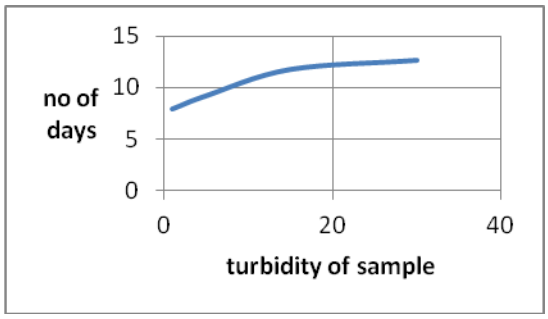
Graph no 1 pH value with respect to time



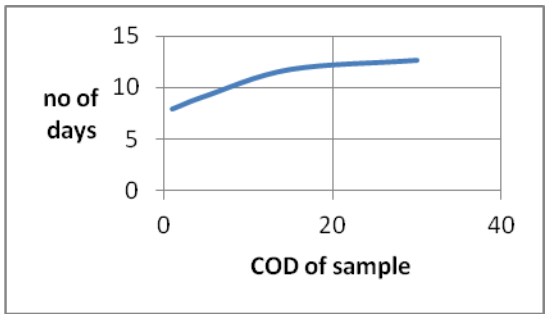
Graph no.2 temperature value with respect to time



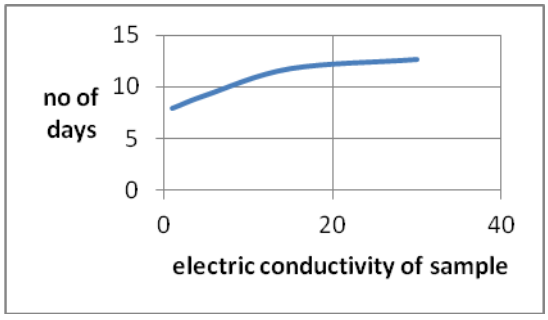
Graph no. 6 DO value with respect to time



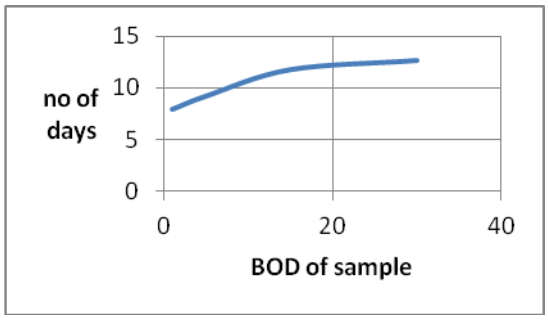
Graph no. 3 turbidity value with respect to time



Graph no. 7 COD value with respect to time



Graph no. 4 electric conductivity value with respect to time



Graph no. 5 BOD value with respect to time

4.5 Conclusion on laboratory testing results:

- According to graph no 4.1 pH of wastewater sample increases with respect to time. pH value shows acidic nature and maximizes the adverse effects on water. By above graph we can say used sanitary napkins are harmful and badly affect the environment if it directly disposes into water sources.
- According to graph no 4.2 temperature of wastewater sample increases with respect to time. Increased temperature maximizes the adverse effects on water. By above graph we can say used sanitary napkins are slightly increase the pollution of environment if it directly disposes into water sources.
- Graph no 4.3 shows the values of dissolved oxygen with respect to time. The graph shows that the concentration of dissolved oxygen of sample is continuously decreases as time increases. If dissolved oxygen concentrations drop below a certain level, fish mortality rates will rise. Sensitive freshwater fish like salmon can't even reproduce at levels below 6 mg/L. In the ocean, coastal fish begin to avoid areas where DO is below 3.7 mg/L, with specific species abandoning an area completely when levels fall below 3.5 mg/L. Below 2.0 mg/L, invertebrates also leave and below 1 mg/L even benthic organisms show reduced growth and survival rates.
- Graph No 4.4 represents the concentration of turbidity in given sample. It shows the value of turbidity is increasing with respect to time. We know that high turbidity significantly reduces the aesthetic quality of water

sources. It can harm fish and other aquatic life by reducing food supplies, degrading spawning beds.

- Graph no 4.5 shows BOD values of contaminated water sample. Biochemical Oxygen Demand is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.
- Graph no 4.6 shows temperature rises with respect to time. . Temperature affects the dissolved oxygen levels in water, the rate of photosynthesis, metabolic rates of organisms, etc. Aquatic organisms depend on particular temperature ranges for their health. Each species of organism thrives in a specific temperature range, and many animals use temperature as a signal for when to reproduce and when to migrate. If there is an abnormality in temperature this can disrupt the balance of aquatic ecosystems with devastating effect.
- Graph no 4.7 the electrical conductivity is strongly dependant on the number of electrons available to participate to the conduction process. Most metals are extremely good conductors of electricity, because of the large number of free electrons that can be excited in an empty and available energy state.

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